

StarTrack Environmental Performance Report

**International Paper - Androscoggin Mill
Jay, Maine**

January 2000

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***International Paper's
Androscoggin Mill,***

International Paper's Androscoggin Mill is one of the original participants in the EPA-New England's StarTrack program. Built in 1965, the facility is located in Jay, Maine near the Androscoggin River. It is an integrated pulp and paper mill, having both groundwood and kraft operations. The mill employs approximately 1,200 people, working three shifts, 24-hours per day. Approximately 1,600 tons of paper are produced daily.

The Androscoggin Mill is the largest employer in Androscoggin County, and is the second largest pulp and paper mill in the state of Maine.

1.1 Name of Company

International Paper – Androscoggin Mill is the legal name of the organization.

1.2 Contact Person

The contact person for information regarding the Androscoggin Mill's participation in the StarTrack program is:

Stephen W. Groves

EHS Manager

International Paper – Androscoggin Mill

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1.3 Major Products and Services

The Androscoggin Mill produces approximately 1,600 tons of paper each day. Since 1996, the mill has completely converted its bleached paper operations over to an elemental chlorine-free (ECF) process.

The Androscoggin Mill's primary product is base sheet paper, which is purchased by the mill's customers for further processing (e.g., printing) prior to final sale to the consumer.

1.4 Facility Information

Mill operations include the following production activities:

- Wood preparation
- Pulp processing
- Utilities and chemical recovery
- Paper production and processing.

Wood Preparation

The Androscoggin Mill processes both hardwood and softwood. Wood is supplied to the mill in the form of both roundwood and chips. The International Paper Woodlands Division supplies all wood for pulping at the Jay, Maine site; therefore the Androscoggin Mill's operations formally begin in the woodyard where logs and chips are received. Roundwood is stored in the woodyard area prior to processing in either the ring de-barker or the wood rooms. Logs processed in the woodrooms are transported using water flumes. Debarked roundwood from the woodrooms is chipped and screened prior to pulping.

Pulp Processing

Pulp processing consists of numerous activities including:

- Groundwood pulping
- Kraft pulping
- Bleaching
- Flash drying
- Recausticizing (chemical recovery).

Groundwood pulping

In the groundwood mill, de-barked wood is mechanically ground using large “stones” to produce groundwood fiber. The fiber is passed through a series of screens for further processing, and then piped to the paper mill for use on the paper machines. Paper made containing groundwood pulp is primarily used for rotogravure printing.

Kraft pulping

In the kraft mill, hardwood and softwood chips are fed into two continuous kraft digesters. The chips are “cooked” in a chemical solution of sodium and sulfur compounds referred to as “white liquor.” Through the kraft pulping process, the lignin in the wood chips is dissolved, thus producing individual wood fibers. Upon exiting the digester, the unwashed pulp, called “brown stock” is screened to remove undigested knots and undersized fibers. The remaining brown stock is then washed to remove residual cooking liquor and to prepare the pulp for bleaching. The spent “black liquor” removed from the fiber is sent to the recovery boiler for reclamation of the chemicals and energy.

Bleaching

***Since 1996, the mill
has converted its***

In 1996, the mill converted its operations to the more environmentally friendly “elemental chlorine-free” or ECF bleaching operations. After the pulping process, the washed pulp is bleached using chlorine dioxide to further aid in brightening the pulp. Additional washing is then completed. The bleached fiber is then transported to the flash dryer or the paper machine area.

Flash Drying

In the flash dryer, a portion of the bleached pulp is dried and compressed into bales. The baled pulp is then either sold to other company facilities or stored for later use on the Androscoggin Mill's paper machines.

Recausticizing (Chemical Recovery)

In the chemical recovery process, black liquor from the pulping process is burned in the recovery boiler and is converted into "green liquor." In the recausticizing process, the green liquor is reacted with a lime solution to form "white liquor" again, which is recycled back to the digesters and pulping process.

The spent lime "mud" from the recausticizing process is washed to remove the remaining alkaline material. The filtrate, called "weak wash" is used as a make-up solution within the pulping and recausticizing process. Lime mud is converted back to quicklime in the lime kiln. New lime solution is made by combining the regenerated quicklime with green liquor, weak wash, or water in the lime slaker. "Green liquor dregs" are inert material and unreacted lime removed from green liquor as part of the recaust process.

Papermaking

Groundwood pulp and bleached kraft pulp are used on the mill's five paper machines to produce coated and uncoated paper products. Paper produced is then converted into saleable rolls in the Processing, Shipping and Delivery department. The paper rolls are transported from the mill to customers via rail or truck.

1.5 Reporting Period

The reporting period for this Environmental Performance Report is for the calendar years 1997, 1998 and 1999; however, for some of the environmental performance data discussed in Section 5 year-end results for 1999 were not yet available. In these cases, the information has been clearly labeled with the inclusive dates (e.g., “through November 1999”).

1.6 Date of Most Recent Report

This represents the second Environmental Performance Report prepared by the Androscoggin Mill under the StarTrack program. The previous report was prepared in October 1997, and included data from reporting year 1996. For most environmental performance data, the previous report showed data going from 1996 back to 1993 or earlier. The current report shows continuing declining trends from 1996 through the end of 1999.

1.7 Significant Changes since Prior Report

There have been no significant changes to the mill’s production processes since the previous report.

1.02 Policies, Organization and Management Systems

2.1 Overview

The Androscoggin Mill has strong environmental policies and programs, and an effective management system in place to support them. Complying with environmental regulatory requirements is at the core of the mill’s business operations, as demonstrated by the Androscoggin Mill’s Mission Statement.

THE ANDROSCOGGIN MILL MISSION STATEMENT

The Androscoggin Mill mission is to make money by:

Thrilling our customers!

Caring about people!

Being a model of compliance!

The Androscoggin Mill's environmental department provides the support necessary to achieve this mission with particular attention to "being a model of compliance." The environmental department's principles of excellence taken from the International Paper Management Agenda include:

- Development of strategies that differentiate us from our competitors
- Pursuit of quality in everything being done. We set stretch goals to achieve rapid and continuous improvement. We have the courage to implement new ideas.
- Use technology to achieve competitive advantage.
- Respect the protection of the environment and health and safety of our fellow employees.
- Honor the letter and spirit of the law.
- Accountability for all that we do.

These principles of excellence reflect the theme of International Paper's Corporate Policy on Environment, Health and Safety:

***INTERNATIONAL PAPER CORPORATE POLICY – ENVIRONMENT, HEALTH
AND SAFETY***

An essential part of our business strategy is to make products in a safe workplace, to manage natural resources wisely and to continually improve our environmental

performance. We are committed to removing the conditions and behaviors that cause personal injury or environmental impact. Therefore we will:

- Comply with applicable environmental, health and safety regulations, with the company's own environmental, industrial hygiene and safety policies and commitments and with the Sustainable Forestry Initiative (SFI) and with the Environmental, Health and Safety principles of the American Forest & Paper Association.*
- Undertake with our employees the creation and maintenance of an accident and injury-free workplace.*
- Emphasize prevention of pollution, elimination of process excursions and continual improvement through employee diligence as the best practicable means to improve the environmental performance of our operations.*

Business site managers are responsible that their locations site:

- Complies with applicable environmental, health and safety laws, regulations and corporate policy and to certify to this requirement.*
- Develops, implements and maintains effective systems, procedures and training to achieve and maintain an accident-free, injury-free and healthful workplace.*
- Integrates continual environmental, health and safety improvement, pollution prevention and employee diligence into daily operations.*
- Develops site-specific annual objectives for environmental, industrial hygiene, safety and worker's compensation improvements that support these goals, policies and statement.*

Driven by the International Paper Corporate Policy, the Androscoggin Mill has an EMS that generally conforms with the intent of the ISO 14001 standard. First and foremost, the mill has a strong compliance assurance process - the most basic component of an effective EMS. This includes systems to identify federal, state and local regulatory requirements, periodic compliance audits conducted by International Paper's corporate audit team, as well as routine self-inspections that verify compliance with these requirements on an on-going basis. Every employee and contractor on the Androscoggin Mill site understands the importance of the mill's commitment to complying with environmental regulations.

The Androscoggin Mill's Environmental

Additionally, the mill has management systems in place for "beyond compliance" activities. Environmental improvement goals are seriously undertaken, and the mill has made dramatic progress in reducing emissions, minimizing waste generation, and other

pollution prevention activities. Perhaps even more important than emissions reductions and waste minimization, the mill has developed management systems for the successful integration of environmental issues into business planning process.

Finally, the mill has the EMS infrastructure in place to support their compliance assurance procedures as well as the beyond compliance activities. These include strong training programs that include both regulatory-required environmental training as well as training on specific plant operations. Systems are in place to manage both internal as well as external communication, and the mill has operational controls in place (including many documented standard operating procedures) to control features of its operations that have the potential for a significant environmental impact.

1.2 Organizational Structure and Responsibilities

At the corporate level, International Paper clearly assigns the following responsibilities to the site manager for each of its business locations: complying with environmental regulations, upholding the Corporate Policy on Environmental, Health and Safety, and implementing programs to help the corporation achieve its environmental goals.

The following represent the corporate-level International Paper environmental goals established for 1997 – 2000:

Environmental Incidents (Releases above permit limits and other spills and releases reportable to the government) – The corporate goal is the elimination of all incidents. Progress toward this goal will be achieved by reducing International Paper’s environmental incidents rate from U.S. operations 15% per year as compared to the prior year goal. The long-term goal is a 70% reduction from the 1993 baseline rate by year-end 2000.

Toxic Release Inventory (TRI) Releases – Reduce International Paper TRI releases from U.S. operations 40% from the 1990 baseline by year-end 2000.

Industrial Toxics Project (ITP) Releases – Reduce International Paper ITP releases from U.S. operations 85% from the 1988 baseline by year-end 2000.

Solid Waste – Reduce International Paper solid waste landfilled from 28 of the company’s largest U.S. business sites 70% from the baseline by year-end 2000.

Hazardous Waste – Reduce International Paper hazardous waste generation from U.S. operations 75% (RCRA wastes shipped off-site and RCRA wastes managed on-site by incineration) from the 1993 baseline by year-end 2000.

At the Androscoggin Mill, the Mill Manager is ultimately responsible for ensuring that the mill complies with environmental regulations, upholds the corporate environmental policy, and must routinely report progress made on achieving the above goals.

The manager of the Androscoggin Mill’s environmental services reports directly to the Mill Manager, and sits with other department managers as a member of the Androscoggin Mill “Lead Team.” The Lead Team is responsible for all major decision-making processes at the mill; the environmental services department representation on the Lead Team helps ensure that environmental issues are given proper attention, and provides the opportunity for environmental awareness and consideration during business planning activities. Through this organizational structure, a clear link is established with the most senior level of management at the site, where the ultimate responsibility for the mill’s environmental performance lies.

***The Androscoggin
Mill’s environmental***

The Androscoggin Mill’s environmental services department has the responsibility for developing and implementing environmental programs within the mill. With the ultimate vision of a mill in complete compliance with all federal, state, and local environmental regulations, and having a minimal “environmental footprint,” the Androscoggin Mill’s environmental department has the following mission statement:

ENVIRONMENTAL SERVICES MISSION STATEMENT

The Androscoggin Mill environmental services department ensures the mill complies with applicable environmental laws, regulations and permits. The department is committed to the mill’s continuous environmental improvement, while maintaining positive relationships with the community. The department accomplishes this mission by:

- Providing environmental training and technical assistance to all areas of the mill;
- Implementing innovative, pro-active environmental management systems;
- Interacting with the community; and
- Maximizing opportunities for financial return.

The department also provides compliance support to the mill’s safety department.

Environmental services department staff have clearly defined roles and responsibilities that have been documented in their comprehensive job descriptions. Additionally, roles and responsibilities related to environmental issues and programs are well understood outside of the environmental services department. This is a critical element in the success of an effective EMS, as each individual must understand their specific responsibilities to ensure that the site stays in compliance and is able to achieve their environmental goals.

In accordance with the above-described Mission Statement, the department has the following objectives and goals:

ENVIRONMENTAL SERVICES OBJECTIVES

Primary Objective:

- To achieve and maintain compliance with environmental regulations

Secondary Objectives:

- To maintain good community relations
- To integrate environmental impacts into all business decisions as part of the normal planning process by managers of each core business
- To generate necessary data for reporting purposes
- To achieve world-class pollution control and world class environmental cost effectiveness.

To achieve these objectives, the environmental services department has the following goals:

GOALS

- Eliminate human-caused environmental incidents

- Minimize wastewater discharges to the river, with a goal of 30 mgd flow to the river by 2005
- Zero wastes to the landfill, or minimize waste and maximize use
- Complete compliance with all environmental regulations, and strive for beyond compliance where it is cost-effective
- Develop “cutting edge” environmental monitoring processes
- Develop environmental compliance processes that optimize operational and manufacturing cost savings
- Evaluate alternative manufacturing processes that minimize environmental effects.

The environmental services department and other employees undertake specific actions to implement programs designed to achieve these goals, which are consistent with the corporate environmental goals established by International Paper. As the broad corporate goals converge and are translated into specific actions linked to responsible individuals at the Androscoggin Mill, International Paper’s corporate environmental policy becomes reality, enabled by the clearly defined roles and responsibilities throughout the organization.

7.1 Management Systems for Company-Specific Issues

Although wood supply and forest management practices are outside of the scope of direct responsibility of the Androscoggin Mill, this is an extremely important issue on a company-wide basis, and International Paper has a long-standing commitment to sustainable forestry. Worldwide, International Paper is responsible for managing almost six million acres of forestland. The management of International Paper’s forests is based on the sustainable forestry standard and performance measures of the American Forest & Paper association’s (AF&PA) Sustainable Forestry Initiative (SFI) program and the company’s own internal guidelines. This standard includes:

- Regenerating every acre of company land harvested within two years by replanting or within five years by managed natural reforestation.
- Harvesting, including clear-cutting, according to scientifically based guidelines. International Paper’s clear-cut harvests in 1998 averaged 65 acres, well below the industry standard of 120 acres. When properly conducted, clear-cutting is the

ecologically preferable method for regenerating some forests and maintaining biodiversity.

- Allowing trees to grow five feet tall before harvesting on adjacent lands. This and other practices, such as maintaining streamside management zones and wildlife corridors, protects water quality, promotes a diversity of wildlife and habitats and creates more pleasing aesthetics.
- Prescribing fertilizers only on a site-specific basis in the South, fertilizing about four percent of these sites annually. International Paper does not apply fertilizers in the Northeast. Total acreage treated annually with rapidly degrading herbicides is about four percent across International Paper's holdings and is consistent with the principles of integrated pest management.

Closer to home, the Androscoggin Mill has many programs in place to manage company-specific issues related to product improvement and the supply chain. These include:

- In 1996, the mill undertook a major effort to become the first "elemental chlorine-free" (ECF) mill in the Northeast. This eliminates the use of chlorine gas in the mill's operations, resulting in both fewer environmental issues as well as safety improvements.
- Fiber loss prevention programs have been in place in the mill for several years. These are designed to both improve the quality of wastewater discharges and minimize the load on the site's wastewater treatment plant, and also to improve product yield.
- The Androscoggin Mill works with customers and suppliers to help improve their environmental programs by sharing knowledge and technical expertise. As demonstrated by the mill's participation in StarTrack, they take the role of "Environmental Leader" seriously; this includes sharing information on improving environmental performance throughout the supply chain.

2.4 External Certifications

The Androscoggin Mill's EMS and compliance audit program has been certified under the StarTrack program. No other external certifications (e.g., ISO 14001) are planned at the present time.

1.01 Community Relationships

2.1 Policies and Procedures

The Androscoggin Mill has an active role in

The mill maintains a policy of open communication with the community, and actively solicits community input and feedback regarding the environmental impacts of the mill's operations. Environmental services department staff routinely attend town of Jay Planning Board meetings; this serves as a means to communicate information about what is going on at the mill, and provides the opportunity for discussion with town officials.

Another mechanism for community involvement is through the Androscoggin Mill's Public Advisory Committee (PAC). Established in 1992, the PAC's membership includes senior mill management and representatives from several local environmental and other organizations, including the Conservation Law Foundation, Natural Resources Council of Maine, the University of Maine, mill employees, and members of the mill's environmental services department. The mission statement of the PAC is:

PUBLIC ADVISORY COMMITTEE MISSION STATEMENT

Act as a public board to help identify environmental issues the Androscoggin Mill must address, and proactively assist in choosing the options. This will be accomplished by developing trust and respect for each other.

The committee continues to meet regularly, and has played an important part of many of the changes that have taken place at the Androscoggin Mill.

2.2 Local Emergency Response Coordination

The Androscoggin Mill is justifiably proud of their emergency prevention, preparedness and response programs. The site's security organization serves as the focal point for

coordinating emergency or other environmental response activities such as the clean-up and reporting of spills. The Androscoggin Mill's emergency response team is fully trained and equipped, and the site conducts spill drills on an annual basis. All regulatory-required emergency response plans are in place, and are updated as necessary. These include evacuation plans and procedures for communication with the town and other external parties in the event of an emergency.

The Androscoggin Mill's emergency response team maintains open communications with the town of Jay and other local emergency responders. The mill has formal crisis management communication systems in place that would be used in the event of an incident with the potential for an off-site or community impact. Additionally, the mill has formal reporting requirements and procedures incorporated into the site's environmental licenses issued by the town. These include, for example, a requirement to notify the town anytime the Regenerative Thermal Oxidizer (RTO) is off-line for maintenance; this notification improves community relations as the town is made aware in advance of any potential temporary increase in odors during RTO maintenance.

3.3 Community Outreach and Communication

The Androscoggin Mill has a prominent position in the local community, and does not take this responsibility lightly. The mill participates in several on-going community outreach programs. These include:

- **Project Learning Tree** – Project Learning Tree (PLT) is a national program sponsored by the American Forest Foundation, a non-profit education and conservation organization. PLT is designed to teach students to think about and understand environmental issues and provides teaching materials. The Androscoggin Mill has provided financial support to PLT in Maine and has supported PLT volunteer efforts by members of the environmental services department.
- **Androscoggin River Watershed Council** – The Androscoggin Mill has participated in organizing and is a member of the Androscoggin River Watershed Council. The mission statement of this organization is *“To improve environmental quality and promote healthy and prosperous communities in the Androscoggin River Watershed.”* The organization's goals are to:

- Actively develop and maintain broad-based involvement in the Council
- Promote educational opportunities in support of the mission
- Advocate and support environmentally responsible economic, community, and recreational development
- Promote the historic and cultural aspects of the river
- Advocate and support continued improvement of the natural environment
- Promote greater understanding and appreciation for the interconnectedness of the resources of the watershed
- Encourage inter-community and interstate cooperation and planning that recognizes the human and natural resources of the watershed.

1.01 Management Performance

4.1 StarTrack Compliance Audit

International Paper's team of corporate auditors conducted a detailed and comprehensive compliance audit of the Androscoggin Mill in January 1997. A team of seven corporate auditors spent five days at the Androscoggin Mill, covering all areas of federal, state and local (town of Jay) environmental regulation. The results of the compliance audit showed the mill to be substantially in compliance with environmental regulatory requirements. The results of this initial StarTrack compliance audit were discussed in the Androscoggin's prior Environmental Performance Report (October 1997).

Due to their superior performance on the

At the time of the initial StarTrack compliance audit, International Paper's corporate audit group had been auditing the Androscoggin Mill on an annual basis. However, due to the mill's good performance on the StarTrack compliance audit, International Paper reduced the frequency of the required corporate audits to once every three years. In accordance with the StarTrack program participant requirements, a full compliance audit that is observed and certified by an independent third party is required every three years. In the off years, the StarTrack program requirements are reduced; these include:

- Verification of the completion of first-year compliance audit corrective actions

- A reduced-scope compliance audit (may be conducted internally, less comprehensive than the first-year audit)
- Environmental management systems audit follow-up (recommended).

To complete the second-year compliance audit requirements, the Androscoggin Mill enlisted the support of the Maine Department of Environmental Protection (ME DEP), who agreed to conduct an audit of the mill. The scope of the audit was reduced to allow a more in-depth focus on specific areas identified by the ME DEP as having a higher priority. The scope of the ME DEP audit included the following regulatory areas and programs:

Water Quality

- Wastewater treatment plant operations
- Procedures for handling discharge exceedances
- Training and documentation

Solid Waste

- Compliance with Operation and Closing Sequence Plan
- Landfill grades
- Operating records
- Waste characterization program

Hazardous Waste

- Spill response and reporting

Air Quality

- Test tracking

- Training documents
- Documentation of systems tracking
- Monitoring

The audit was conducted on February 1 and 2, 1999 by a multi-disciplinary team of ME DEP auditors. Audit activities included opening and closing meetings, detailed site inspections, review of records and documentation, and interviews with site personnel. A representative from ENSR Consulting & Engineering, an environmental consulting firm, assisted the ME DEP in conducting the audit, and was responsible for consolidating the ME DEP's audit findings into a final report.

The results of the ME DEP's compliance audit concluded that the mill was substantially in compliance with federal, state and local environmental regulations and permit conditions. The following subsections summarize the findings of the 1999 compliance audit:

Violations Resulting in Actual Environmental Harm, Endangerment, Economic Benefit, Criminal Violations, or Violations of Administrative Consent Orders

There were a total of 20 findings made by the ME DEP in the 1999 compliance audit. Of these, 50% (10 findings) were deficiencies that were cited against the requirements of environmental regulations and/or permit conditions. The remaining 50% of the audit findings were not direct regulatory requirements, and were included in the audit report as "Good Management Practice" recommendations. The majority of the findings related to written documentation and data management within the mill's Continuous Emissions Monitoring System (CEMS).

None of the compliance audit findings resulted in actual environmental harm nor did they present a threat of imminent environmental harm or impact. No audit findings were deemed to have resulted in an economic benefit to the mill. None represented criminal violations or violations of administrative consent orders.

Formal Enforcement Actions

At the time of the audit, the Androscoggin Mill was not under any type of formal enforcement action such as a Notice of Violation, Notice of Non-compliance, or administrative consent order, and none were issued as a result of the 1999 ME DEP audit.

Regulatory Program Implementation Deficiencies

Several of the compliance audit findings related to minor deficiencies in the Androscoggin Mill's implementation of required regulatory programs. These included, for example:

- The mill's CEMS quality assurance/quality control manual had not been updated on an annual basis, as required by ME DEP regulations.
- The mill did not have formal ME DEP approval for the performance audit procedures for one of their CEMS monitors.
- Standard Operating Procedures relative to the mill's wastewater discharge license did not provide sufficient information for the operators to follow in some circumstances.
- Final cover had not yet been applied to sections of the landfill in accordance with the Landfill Operational and Closing Sequence Plan.

Record-keeping and Reporting Deficiencies

Several of the compliance audit findings related to minor deficiencies in the mill's required recordkeeping and reporting. These included, for example:

- Certain CEMS performance checks were not included in the quarterly audit reports.
- The CEMS annual 7-day drift test, although being performed, was not included in the QA/QC plan.
- Certain raw data was not provided in the quarterly CEMS data assessment reports.
- The mill has been reporting spills in accordance with an alternate oil spill reporting procedure negotiated on an informal basis with the Central Maine Regional Response Office of the ME DEP. However, this informal agreement is not consistent with the stringent ME DEP regulatory requirements to report all oil spills regardless of the quantity or spill location (e.g., including small spills within a containment area).

3.2 EMS Audit

A formal EMS audit was conducted in December 1996 as part of the initial round of audits conducted for the Androscoggin Mill's initial participation in the StarTrack program. For the second year of participation, a reduced-scope EMS audit was conducted by ENSR

Consulting & Engineering. The EMS audit was conducted simultaneously with the compliance audit performed by the ME DEP, and had the following objectives:

- Evaluate the mill's progress in making EMS improvements since the prior StarTrack EMS audit, and as outlined in the mill's EMS Implementation Plan
- Where possible, identify root cause issues or management systems deficiencies indicated by the concurrent compliance audit as conducted by the ME DEP.

The EMS update audit was accomplished via interviews, review of documentation, and the analysis of compliance audit findings.

***The Androscoggin Mill
continues to make***

Overall, the results of the 1999 EMS audit indicated that the Androscoggin Mill continues to have strong systems in place for managing environmental compliance issues and the mill's various environmental improvement initiatives. Since the prior EMS audit, improvements had been made in the area of "Operational Controls." A number of new and updated standard operating procedures (SOPs) had been developed, particularly in the wastewater treatment area. Additionally, the environmental services department had upgraded many job descriptions to more accurately reflect current roles and strengthen the designation of responsibilities. Recommendations for further improvements made in the 1999 EMS audit included:

- Clarification and documentation of environmental roles and responsibilities in operating groups outside of the environmental services department, with particular emphasis on defining the interface where responsibility is handed off from one group to the other.
- Development of a self-audit process to supplement the International Paper corporate audits. Because the frequency of the mill's corporate audits has been reduced based on their good performance record, it was recommended that the mill institute a self-audit program to ensure continued compliance.
- Complete the review of "environmental aspects" that are under the mill's control or influence, establish significance criteria, and priorities.
- Complete documentation of the EMS Manual.

4.1 Corrective Actions

An important element of the 1999 StarTrack compliance and EMS audits was the verification of the completion of corrective actions conducted in response to the initial round of StarTrack audits conducted in December 1996 and January 1997.

As part of the ME DEP's 1999 compliance audit, audit findings from the prior International Paper corporate compliance audit were reviewed, and the ME DEP auditors verified that all corrective actions had been completed and addressed appropriately. Similarly, the 1999 EMS audit update conducted by ENSR Consulting & Engineering included a review of the findings of the prior EMS audit, the Androscoggin Mill's subsequent EMS Implementation Plan, and evaluated the mill's progress in implementing EMS improvements.

Although a formal corrective action plan was not prepared, the Androscoggin Mill has addressed each of the regulatory issues identified in the 1999 compliance audit report. The EMS improvements are being addressed as well; however, the timeframe of the action items identified in the 1999 EMS audit update report reflects the "continual improvement" nature of EMS development, and the action items are in progress, representing on-going improvement efforts.

4.2 Unauthorized Releases

The Androscoggin Mill demonstrates a strong

The Androscoggin Mill tracks all "Environmental Incidents" which are further defined as either "category 1" or "category 2" depending upon their severity. Category 1 environmental incidents include any spills in quantities exceeding the threshold requiring reporting to a government agency (reportable quantity or TPQ), any release or discharge that migrates off-site and has the potential for a significant impact, or significant exceedances or violations of environmental permit requirements. Category 2 environmental incidents are less serious infractions, including non-reportable spills and releases, spills or incidents that do not have an off-site impact (other

than minor nuisance impacts), or minor permit violations or exceedances. Consistent with the corporate objectives, the Androscoggin Mill is working towards a goal of zero environmental incidents of both categories. Following a strong declining trend since environmental incident tracking began in 1993, the Androscoggin Mill achieved its goal of zero Category 1 incidents in 1999 (down from 57 incidents in 1993), with no reportable spills or major permit exceedances throughout the entire year. While not quite at the same level, Category 2 incidents were still quite low at a total of 8 in 1999 (down from 76 in 1993). The following table provides illustration of the declining trends in Category 1 and 2 environmental incidents at the Androscoggin Mill in the past seven years.

Table 1 – Androscoggin Mill Environmental Incidents Tracking

4.5 Remediation Activities

No areas of contamination have been identified on the Androscoggin Mill site that require clean up or remediation activities.

1.01 Operational Performance Inputs

5.1 Electricity Use

The Androscoggin Mill generates approximately 80 megawatts of electricity on site and purchases electricity from Central Maine Power Co. (CMP). This includes electricity derived from fossil fuel combustion as well as hydro generating stations. In 1998, the Androscoggin Mill purchased 208,208 thousand kilowatt-hours (MKWH) from CMP. Through November 1999, year-to-date electricity purchase was 206,361 MKWH.

Natural gas is soon to be provided to the area via a recently-constructed pipeline, and the mill has contracted to purchase a portion of its electricity and steam needs from a gas-fired cogeneration station presently under construction on adjacent property in Jay. The co-gen facility is expected to come on-line and begin operations in 2000.

The mill operates four hydroelectric generating stations located along the Androscoggin River. The mill uses electricity generated from the hydro stations and some is sold back to the utility under an agreement with CMP.

4.2 Other Energy Use

The Androscoggin Mill's utility plant uses several types of fuel to generate steam used in the pulp and paper manufacturing processes. This includes both purchased fossil fuel (No. 6 and No. 2 fuel oil) as well as self-generated and by-product fuels. Fuel usage for 1998 and 1999 (through November) are presented in the table below.

Table 2 – Androscoggin Mill Other Energy Use (MMBtu)

4.3 Total Energy Use

Pulp and paper manufacturing is an energy-intensive business, and particularly so in the Northeastern U.S. where winters are cold and additional energy is required to maintain production temperatures. The Androscoggin Mill actively tracks its electricity consumption and other fuel use, and is constantly seeking ways to minimize energy use while maintaining production levels and product quality.

Over 50% of the mill's energy use is derived from renewable resources or from recoverable resources in the form of by-products from the manufacturing

In 1998, the Androscoggin Mill used 8,800,613 million British thermal units (MMBtu) of energy from purchased fossil fuel energy. In 1999 year-to-date (through November) energy from purchased fossil fuels was at 8,003,021 MMBtu which indicates usage at approximately the same rate as the prior year.

In 1998, the Androscoggin Mill used 9,812,148 MMBtu from self-generated and by-product fuels (including hydropower, bark and fines, sludge, and the combustion of spent liquor). In 1999 year-to-date (through November), energy from these sources was at 11,024,490 – up approximately 22% from 1998.

Purchased electricity was at 710,614 MMBtu in 1998 and 704,310 MMBtu year-to-date in 1999 – up approximately 8%.

In 1998, approximately 51% of the site's total energy use was derived from renewable resources or process by-products, such as bark and fines, hydropower, sludge, and waste paper. In 1999, although overall energy consumption has increased, the percentage derived from renewable resources and by-products has also increased, up to 56% year-to-date (through November) in 1999.

5.4 Total Water Use

The Androscoggin Mill does not directly measure the water consumed by the mill in the pulp and paper manufacturing process. However, the mill maintains careful records of its effluent through the wastewater treatment plant. Since water added to the pulping and papermaking processes is primarily removed via drying processes that discharge wastewater to the site's treatment plant, the mill's effluent rate is roughly representative of total water usage (although some losses due to steam evaporation from the paper machines will be unaccounted for). The following table presents effluent flow rates from the wastewater treatment plant.

Table 3 – Androscoggin Mill Wastewater Effluent Flow Rate (Water Usage)

Outputs

5.5 Air Emissions

The Androscoggin Mill holds air emissions licenses both with the ME DEP as well as the town of Jay. The mill's air emissions licenses have discharge limits for a variety of pollutant and other air emissions parameters. These include opacity, carbon monoxide (CO), nitrogen oxides (NOx), sulfur dioxide (SO₂), inhalable particulates (PM₁₀), and volatile organic compounds (VOCs). Some parameters are required to be monitored on a continuous basis, using continuous emissions monitoring systems (CEMS). Other

parameters are monitored periodically via stack testing procedures. Although the mill experiences an occasional excursion, the vast majority of the time the mill operates within the stringent confines of its state and local air emissions licenses.

Over the years, the Androscoggin Mill has made numerous capital investments in air pollution control equipment, and all significant air emission sources at the mill are controlled. This includes the 1996 installation of the Regenerative Thermal Oxidizer (RTO) unit that collects and incinerates high-volume low-concentration pulp mill and power plant emissions that contribute to the odors typically associated with the kraft pulp mill process. This state-of-the-art air emissions control equipment allows the Androscoggin Mill to operate with among the lowest emission rates in the industry.

The Androscoggin Mill's air emissions for key parameters are presented in the following table.

Table 4 – Androscoggin Mill Air Emissions (tons per year)

5.6 Noise and Odor

Anyone who has ever been to a kraft process pulp and paper mill will notice one thing right away about the Androscoggin Mill – it does not smell bad! The installation of the RTO incinerator which destroys odorous compounds from the pulp mill and bleach plant, coupled with other air emissions control systems installed throughout the plant have resulted in a significant reduction in the sulfur-compound odors typically associated with pulp and paper mills. Except for an occasional equipment malfunction, the mill's air emissions control systems are effective in controlling odors from the mill's operations, a benefit to both employees and the surrounding community.

The air emissions license issued to the Androscoggin Mill by the town of Jay requires the mill to notify the town when certain equipment is taken down for maintenance or when there is a process upset. The implementation of this notification has reduced the number of odor complaints to zero for 1999 – by notifying the townspeople that there is a temporary

situation that may result in a short-term increase in odors, better community relations have been maintained and complaints about the mill have decreased.

The Androscoggin Mill is well buffered by its siting and location, and noise is typically not an issue. In late 1999 the town of Jay did receive one noise complaint regarding the mill; however, the noise in question was actually from testing being conducted at the new co-generation plant being constructed nearby, and did not come from the Androscoggin Mill or its operations.

5.7 Greenhouse Gases

The Androscoggin Mill is not required to monitor for greenhouse gases (carbon dioxide, methane, nitrous oxide, halocarbons) as these are not regulated air pollutants in either the federal EPA or ME DEP regulations or in the town of Jay's ordinances.

As with any other industry that has boilers and other fuel-burning processes, greenhouse gases are a normal by-product of combustion. At the Androscoggin Mill, the careful optimization of combustion processes helps ensure that the emissions of these gases are minimized.

5.8 Ozone-Depleting Chemicals

The Androscoggin Mill does not use ozone-depleting substances in their manufacturing process. The only potential source of emissions of these substances would be via a leak or discharge from an air conditioning or refrigeration system that contains chlorofluorocarbons (CFCs). To prevent releases of CFCs, the Androscoggin Mill manages ozone-depleting substances (CFCs) present on-site in accordance with the "CFC Policies and Procedures" manual (latest update June 1999). The CFC Policies and Procedures manual includes requirements for:

- Refrigerant equipment maintenance procedures
- Certification and training of technicians who work on refrigeration equipment
- Contractor procedures

- Procurement, receiving and distribution of ozone-depleting refrigerants
- Refrigerant recovery procedures
- Labeling
- Recordkeeping and reporting
- Disposal of CFC-containing equipment
- Troubleshooting and maintenance techniques.

By following the procedures in this manual, the mill helps ensure that any releases of ozone-depleting substances are minimized.

5.9 Chemical Release Data

The Androscoggin Mill reports the release of toxics under the requirements of the U.S. EPA's SARA Title III Toxics Release Inventory (TRI). A steady declining trend of TRI emissions was demonstrated by the mill until recently when the U.S. EPA amended SARA Title III Form R reporting requirements to include additional items (heavy metals) on the list of chemical substances which must be reported. The following table presents the Androscoggin Mill's TRI data from 1990 to 1998 (1999 TRI information was not available at the time of preparation of this report).

Table 5- Androscoggin Mill Toxics Release Inventory (TRI) Data

5.10 Special Programs

At the Androscoggin Mill, in addition to efforts to reduce air emissions, waste generation, and water discharges, two environmental programs deserve special consideration:

In 1996, the Androscoggin Mill became the first kraft pulp mill in the Northeast and one of the first mills within International Paper corporation to become elemental chlorine-free (ECF). By converting pulp bleaching processes to the use of other substances, two important environmental goals were achieved:

- By eliminating the use of chlorine gas in the bleach plant, the risks associated with potential chlorine gas leaks has been dramatically reduced, and
- By converting to an ECF process, the mill has effectively eliminated the presence of trace levels of dioxin in both the product as well as the mill's wastewater discharges.

Additionally, the mill has on-going efforts in the area of fiber loss management. As part of the papermaking process, water is removed from the pulp feedstock solution in the paper machines. As wastewater is separated from the pulp (creating paper in the process), pulp fibers are entrained in the wastewater. This results in both an environmental as well as a business impact – fiber loss on the paper machines means reduced product yield, and fibers in the wastewater effluent increase the burden and reduce the efficiency of operation of the wastewater treatment plant. The Androscoggin Mill has undertaken numerous efforts to minimize fiber loss in the papermaking process, and has benefited from both improved yields as well as more efficient wastewater treatment.

5.11 Hazardous Waste

In 1996, the Androscoggin Mill became a small quantity generator of hazardous waste – a significant achievement for a mill of its size and complexity. The mill carefully manages all waste streams, and has achieved an outstanding 95% reduction in hazardous waste generation since 1990. Hazardous waste generation rates for 1990 – 1998 are presented below (1999 waste generation figures were not available at the time of this report).

***In 1996, the
Androscoggin Mill
became a small***

Table 6 – Androscoggin Mill Hazardous Waste Generation

The Androscoggin Mill currently generates less than 100 kilograms per month of hazardous waste. The remaining hazardous wastes generated by the mill include slag from the RTO unit, spent hydrogen sulfide monitors, and Ni-Cd batteries.

5.12 Non-Hazardous Waste

The mill also has strong management programs to control the generation of non-hazardous solid waste. In fact, solid wastes are referred to not as “waste” but as “by-products” – and management of these by-products in an environmentally responsible manner is a core responsibility of the environmental services department. Non-hazardous wastes or “by-products” generated by the mill include ash from the Waste Fuel Incinerator (WFI), green liquor dregs, flume grit, knots and screenings, bark, and wastewater treatment sludge. Trash and demolition debris are also generated.

The Androscoggin Mill is constantly seeking innovative ways to safely manage by-products, including the following:

- There is a strong waste separation and recycling program that operates mill-wide. Waste papers and other material suitable for combustion in the WFI are carefully segregated, reducing the volume of material that must be disposed of off-site.
- Treatment plant sludge is incinerated in the WFI, minimizing the amount that requires landfilling.
- In 1999, the mill undertook a beneficial use demonstration project to pilot a new way of managing solid waste by-products including precipitated calcium carbonate lime grit, green liquor dregs combined with slaker grit, multi-fuel boiler ash, and cement kiln dust. These by-product materials are normally disposed of at the Androscoggin

Mill or off-site landfill. The intent is to beneficially use these solid waste by-products as a cement-like mixture referred to as “ashcrete;” the re-use of this material will avoid their placement in a landfill. Depending upon results of stability and structural testing, the ashcrete will be used as a cement substitute at various locations around the mill.

The Androscoggin Mill operates a 55-acre special waste landfill (“landfill”) and a one-acre permit-by-rule construction and demolition debris dump (“C&D dump”). Only waste streams permitted by the state and local authorities may be disposed of in the landfill, while only construction and demolition debris may be placed in the C&D dump.

The landfill is operated to minimize the amount of leachate generated and maximize the life of the facility. Groundwater in the vicinity of the landfill is monitored through a series of monitoring wells. Groundwater collection systems are currently in place to collect impacted groundwater and convey it to the mill’s wastewater treatment plant.

5.13 Water Discharges

All process and sanitary wastewaters generated at the Androscoggin Mill are treated at the on-site wastewater treatment plant. Stormwater from the facility is also collected and treated at the plant. The treated effluent is discharged to the Androscoggin River. Operation of the treatment plant is regulated by federal, state, and local authorities.

The treatment plant processes approximately 41 million gallons of wastewater per day. Wastewater to the plant is screened to remove coarse material, clarified to remove settleable solids, treated in an aerated lagoon, clarified again and discharged to the Androscoggin River. Sludge generated in the wastewater treatment plan is dewatered, and either burned in the WFI (60%) or landfilled (40%). Alternative uses for the sludge are currently being evaluated.

The following are wastewater discharges from the Androscoggin Mill for the years 1997, 1998, and 1999.

Table 7 – Androscoggin Wastewater Discharges

Note: BOD is through Nov. 99

COD is through Sept. 99

1.01 Product Performance

6.1 Post-Production Environmental Impacts

The most significant post-production impact of the Androscoggin Mill's products - pulp and paper – is the generation of solid waste by the consumer. The Androscoggin Mill's primary product is base sheet paper. The mill's customers purchase the base sheet and conduct further processing such as printing. The Androscoggin Mill must ensure that the base sheet product meets acceptable quality standards for strength, brightness, and other requirements. Typically, the exact product specifications are determined by the mill in consultation with specific clients to address their particular needs. The Androscoggin Mill ensures, however, that the mill's entire product is 100% recyclable as it enters the marketplace.

6.2 Product Stewardship

International Paper and the Androscoggin Mill have implemented a variety of programs to minimize the life-cycle impacts of their products and services.

- The elimination of the use of elemental chlorine in the bleaching process at the Androscoggin Mill has virtually eliminated the trace levels of dioxin that may have been present in finished pulp and paper products, and has reduced the environmental impact of the bleaching process itself.
- International Paper's Business Services group supports the company's sales and marketing staff and helps customers with product stewardship, producer responsibility, and eco-labeling issues.
- The Androscoggin Mill is routinely audited by customers who are increasingly interested in environmental issues, driving the mill's programs for continual improvement of environmental performance upward.